

## INTERNATIONAL SEARCH REPORT

International Application No. 03/10600

PC 03/10600

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C01B31/02 C08K7/24 C08K3/04 C08K9/04 C08G18/70  
 C08G18/00 C08G18/28 C08G18/08 C07C263/06

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C01B C08K C08G C07C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, COMPENDEX, CHEM ABS Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No.                    |
|------------|---|--|
| X          | US 6 426 134 B1 (LAVIN JOHN GERARD ET AL)<br>30 July 2002 (2002-07-30)<br><br>column 2, line 1 - line 23<br>column 5, line 27 - column 6, line 24   | 1-3,7,<br>9-16,28,<br>44,45,52           |
| P,X        | WO 03/038837 A (HYPERION CATALYSIS INT)<br>8 May 2003 (2003-05-08)<br><br>page 2, line 20 - line 25<br>page 9, line 22 - page 10, line 3<br>page 14, line 2 - line 4<br>page 14, line 24 - line 25<br>page 17, line 30 - line 31<br><br>---<br>-/-- | 1-3,7,<br>9-16,24,<br>25,28,<br>44,45,52 |



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

\*&\* document member of the same patent family

Date of the actual completion of the international search

12 May 2004

Date of mailing of the international search report

14.06.04

Name and mailing address of the ISA

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# INTERNATIONAL SEARCH REPORT

International Application No  
PC 03/10600

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No.                           |
|------------|--|---|
| A          | <p>US 2002/161101 A1 (CARROLL DAVID ET AL)<br/>31 October 2002 (2002-10-31)</p> <p>paragraphs<br/>'0022!, '0042!-'0047!, '0051!, '0058!, '0062!</p>  | <p>1,3,7,9,<br/>11-16,<br/>28,44,<br/>45,52</p> |
| A          | <p>WO 01/10779 A (HYPERION CATALYSIS INT)<br/>15 February 2001 (2001-02-15)</p> <p>page 3, line 18 - line 19<br/>page 6, line 13 - line 19; examples 3,5;<br/>table 1</p>  | <p>1,3,<br/>11-16,<br/>28,44,<br/>45,52</p>     |
| A          | <p>HIRSCH, ANDREAS: "Functionalization of<br/>Single-Walled Carbon Nanotubes"<br/>ANGEW. CHEM. INT. ED.,<br/>vol. 41, no. 11, 3 June 2002 (2002-06-03),<br/>pages 1853-1859, XP002241543<br/>cited in the application<br/>"Covalent Sidewall Functionalization"</p>  | <p>1-6</p>                                      |
| A          | <p>EP 0 716 044 A (NAT SCIENCE COUNCIL)<br/>12 June 1996 (1996-06-12)<br/>the whole document</p>   | <p>29-52</p>                                    |
| A          | <p>VAN STEEN ERIC ET AL: "Comparison of<br/>preparation methods for carbon nanotubes<br/>supported iron Fischer-Tropsch catalysts"<br/>FISCHER-TROPSCH SYNTHESIS ON THE EVE OF<br/>THE XXI CENTURY (CATSA);KRUGER PARK, SOUTH<br/>AFRICA NOV 1 2000,<br/>vol. 71, no. 3-4,<br/>1 November 2000 (2000-11-01), pages<br/>327-334, XP002280026<br/>Catal Today;Catalysis Today Jan 15 2002<br/>"Experimental"</p> | <p>29,30,<br/>44,45,52</p>                      |

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP 03/10600

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

**1. Claims: 1-28 and partially 44-48 and 52**

Method of solubilizing carbon nanotubes comprising the steps of mixing functionalized carbon nanotubes and a monomer molecule (or a precursor of a monomer) and then polymerizing wherein said polymerization occurs at the functional groups on the nanotubes.

Modified carbon nanotubes and an association of carbon nanotubes obtainable by the afore-mentioned process.

Use of the afore-mentioned modified carbon nanotubes.

**2. Claims: 29-43, 49-51 and partially 44-48, 52**

Method for solubilizing carbon nanotubes comprising the steps of mixing together carbon nanotubes and urea and heating the mixture.

Modified carbon nanotubes and an association of carbon nanotubes obtainable by the afore-mentioned process.

Use of the afore-mentioned modified carbon nanotubes.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PO P 03/10600

| Patent document<br>cited in search report |    | Publication<br>date | Patent family<br>member(s)  | Publication<br>date  |
|---|----|---------------------|---|--|
| US 6426134                                | B1 | 30-07-2002          | NONE  |  |
| WO 03038837                               | A  | 08-05-2003          | WO 03038837 A1<br>US 2003089893 A1  | 08-05-2003<br>15-05-2003   |
| US 2002161101                             | A1 | 31-10-2002          | WO 02076903 A2  | 03-10-2002   |
| WO 0110779                                | A  | 15-02-2001          | US 6113819 A<br>AU 6494900 A<br>WO 0110779 A1                                     | 05-09-2000<br>05-03-2001<br>15-02-2001                             |
| EP 0716044                                | A  | 12-06-1996          | JP 8183830 A<br>US 5635581 A<br>EP 0716044 A1<br>DE 69417561 D1<br>DE 69417561 T2 | 16-07-1996<br>03-06-1997<br>12-06-1996<br>06-05-1999<br>15-07-1999 |